

Name: _____

Date: _____

PC: Complex Fractions

Do Now:

Perform the indicated operations and simplify.

1. $\frac{a}{a+2} - \frac{2}{3-a} - \frac{3a+1}{a^2-a-6}$

2. $\frac{x^2-9}{27+3x^2} \cdot \left(\frac{x^2+x-6}{x-4} \div \frac{6-x-x^2}{3x-12} \right)$

A fraction in which the numerator or denominator contains one or more fractions or negative exponents is called a *complex fraction*.

1. Simplify $\frac{2 - \frac{1}{x}}{\frac{1}{x^2} - \frac{1}{2}}$

Method 1

Method 2

Steps

- 1.
- 2.
- 3.
- 4.

Steps

- 1.
- 2.
- 3.

Simplify each of the following.

$$2. \frac{\frac{1}{a} + \frac{3}{b}}{\frac{1}{b} - \frac{3}{a}}$$

$$9. \frac{x^{-1}}{x^{-1} - y^{-1}}$$

$$3. \frac{5 - \frac{3}{a}}{3 + \frac{1}{a}}$$

$$10. \frac{x^{-1} + y^{-1}}{x^{-1} - y^{-1}}$$

$$4. \frac{\frac{1}{3} - \frac{2}{x}}{\frac{2}{x} - \frac{1}{x^2}}$$

$$11. \frac{a^{-2} - 1}{1 + a^{-1}}$$

$$5. \frac{\frac{1}{x} + \frac{1}{y}}{\frac{1}{x} - \frac{1}{y}}$$

$$12. \frac{\frac{1}{n} - \frac{1}{3n^2}}{1 - \frac{1}{9n^2}}$$

$$6. \frac{1 - \frac{2}{n}}{\frac{4 - n^2}{n}}$$

$$13. \frac{1 + a^{-1}}{a - a^{-1}}$$

$$7. \frac{1 + \frac{1}{x}}{1 - \frac{1}{x^2}}$$

$$14. \frac{x + 2x^{-1} - 3}{x - 1 - 2x^{-1}}$$

$$8. \frac{\frac{a}{a+b}}{1 - \frac{b}{a+b}}$$

$$15. \frac{2x^{-1} - 2}{\frac{1-x}{x}}$$

$$16. \frac{4u^{-1} + (uv)^{-1}}{v^{-1} - 5}$$

$$19. \frac{\frac{1}{y-3} - \frac{1}{y+4}}{1 + \frac{1}{y^2 + y - 12}}$$

$$17. \frac{\frac{x}{x+3}}{1 - \frac{x}{x+3}}$$

$$20. \frac{\frac{x}{x+1}}{\frac{1}{x^2-1} - \frac{1}{x-1}}$$

$$18. \frac{\frac{a}{a^2-b^2}}{\frac{1}{a+b} + \frac{1}{a-b}}$$